

Scope of the Claims

1. A data backup and recovery system for computers characterized by provision of:

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blocks storing sequentially records containing a single unique key and zero or one or more non-unique keys;

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a primary system that controls the location of these blocks by means of a location table pairing the blocks with physical addresses in random access memory and manages a database or databases stored in random access memory; and

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a secondary system or systems that is provided with backup blocks corresponding to the blocks of the said primary system in which the source data is stored, controls the location of these blocks by means of a location table pairing the blocks with physical addresses in random access memory, and manages a database or databases stored in random access memory.

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2. The said data backup and recovery system of Claim 1, characterized by:

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provision of an said primary system that uses the main memory of the primary processing device that performs application processing as the said random access memory and is provided with a database control mechanism that modifies the content of a database or databases in the said random access memory and a primary backup and recovery control mechanism that transmits data describing those modifications when the said database control mechanism has modified the said database or databases; and

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provision of an said secondary system or systems, each of which uses the main memory of the secondary processing device as random access memory and is provided with a secondary backup and recovery

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control mechanism that modifies the backup database in the said random access memory with the data transmitted from the said primary backup and recovery control mechanism.

5 3. The said data backup and recovery system of Claim 1,
characterized by provision of a said primary system provided with
a primary processing device that performs application processing
and a primary storage device separate from the main memory of
this primary processing device and made up of random access memory
10 that stores the said database or databases, and by provision of
a said secondary system or systems, each of which provided with
a secondary processing device that executes processes and a
secondary storage device separate from the main memory of this
secondary processing device and made up of random access memory
15 that stores said database or databases.

4. The said data backup and recovery system of Claim 1,
characterized by:

20 the said primary system equipped with primary processing device
that performs application processing and a primary storage
device made up of random access memory that store a database or
databases apart from the main memory of the primary processing
device;

25 the said secondary system or systems equipped with only a
secondary storage device made up of random access memory that
store a database or databases;

30 the said primary storage device provided with means of performing
backup data communication, a database control mechanism that
modifies the content of the said database or databases, and a
primary backup and recovery control mechanism that transmits via
the said means of communication data describing those
35 modifications when the said database control mechanism has
modified the content of the said database or databases; and

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the said secondary storage device provided with a means of performing backup data communication and a secondary backup and recovery control mechanism that modifies the said backup
5 database or databases with the data transmitted via the said means of communication from the said primary backup and recovery control mechanism.

5. The said data backup and recovery system of Claim 1,
10 characterized by:

the said primary system transmitting transaction initiation information when transaction processing is initiated and transmitting to the said secondary system updated data and
15 information specifying the blocks where update content and data are stored;

the said secondary system or systems updating the relevant data each time it receives information describing updated data on the
20 basis of the information describing the updated data of the relevant transaction; and

the said primary system provided with a synchronous tightly-coupled sequencing system arranged to transmit update completion
25 information to the said secondary system or systems when a transaction data update is completed.

6. The said data backup and recovery system of Claim 1,
30 characterized by:

the said primary system transmitting to the secondary system or systems the content of updated data and information specifying the blocks where update content and data are stored; and

35 the said secondary system or systems provided with an asynchronous loosely-coupled sequencing system arranged to

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receive transaction initiation information from the said primary system and then receive log data during the transaction and update the relevant data, and to not transmit backup completion information to the said primary system after receiving
5 transaction completion information from the primary system until that backup update processing has completed.

7. The said data backup and recovery system of Claim 2, characterized by:

10 the said primary system transmitting transaction initiation information when transaction processing is initiated and transmitting to the said secondary system or systems updated data and information specifying the blocks where update content and
15 data are stored;

the said secondary system or systems updating the relevant data each time it receives information describing updated data on the basis of the information describing the updated data of the
20 relevant transaction; and

the said primary system provided with a synchronous tightly-coupled sequencing system arranged to transmit update completion information to the said secondary system or systems when a
25 transaction data update is completed.

8. The said data backup and recovery system of Claim 2, characterized by:

30 the said primary system transmitting to the secondary system or systems the content of updated data and information specifying the blocks where update content and data are stored; and

the said secondary system or systems provided with an
35 asynchronous loosely-coupled sequencing system arranged to receive transaction initiation information from the said primary

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system and then receive log data during the transaction and update the relevant data, and to not transmit backup completion information to the said primary system after receiving transaction completion information from the primary system until
5 that backup update processing has completed.

9. The said data backup and recovery system of Claim 1, characterized by:

10 the said primary processing device provided with a communicating means that performs communication of backup data, a database control mechanism that modifies the content of the said database or databases, and a primary backup and recovery control mechanism that transmits via the said communicating means data describing
15 modifications when the said database control mechanism has modified the content of the said database or databases; and

the said secondary processing device provided with a communicating means that performs communication of backup data and a secondary backup and recovery control mechanism that
20 modifies the said backup database or databases with the data transmitted via the said communicating means from the said primary backup and recovery control mechanism.

25 10. The said data backup and recovery system of Claim 1, characterized by:

the said primary processing device and secondary processing device equipped solely with communicating means that performs
30 communications of backup data between them;

the said primary storage device provided with a database control mechanism that modifies the content of the said database or databases and a primary backup and recovery control mechanism
35 that transmits via the said communicating means data describing updates when the said database control mechanism has modified

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the content of the said database or databases; and

the said secondary storage device provided with a secondary
backup and recovery control mechanism that modifies the said
5 backup database or databases with the data transmitted via the
said communicating means from the said primary backup and
recovery control mechanism.

11. The said data backup and recovery system of Claim 3,
10 characterized by:

the said primary system transmitting transaction initiation
information when transaction processing is initiated and
transmitting to the said secondary system or systems updated data
15 and information specifying the blocks where update content and
data are stored;

the said secondary system or systems updating the relevant data
each time it receives information describing updated data on the
20 basis of the information describing the updated data of the
relevant transaction; and

the said primary system provided with a synchronous tightly-
coupled sequencing system arranged to transmit update completion
25 information to the said secondary system or systems when a
transaction data update is completed.

12. The said data backup and recovery system of Claim 3,
characterized by:

30 the said primary system transmitting to the said secondary system
or systems updated data and information specifying the blocks
where update content and data are stored; and

35 the said secondary system or systems provided with an
asynchronous loosely-coupled sequencing system arranged to

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receive transaction initiation information from the said primary system and then receive log data during the transaction and update the relevant data, and to not transmit backup completion information to the said primary system after receiving
5 transaction completion information from the primary system until that backup update processing has completed.

13. The said data backup and recovery system of Claim 4, characterized by:

10 the said primary system transmitting transaction initiation information when transaction processing is initiated and transmitting to the said secondary system or systems updated data and information specifying the blocks where update content and
15 data are stored;

the said secondary system or systems updating the relevant data each time it receives information describing updated data on the basis of the information describing the updated data of the
20 relevant transaction; and

the said primary system provided with a synchronous tightly-coupled sequencing system arranged to transmit update completion information to the said secondary system or systems when a
25 transaction data update is completed.

14. The said data backup and recovery system of Claim 4, characterized by:

30 the said primary system transmitting to the said secondary system or systems updated data and information specifying the blocks where update content and data are stored; and

the said secondary system or systems provided with an
35 asynchronous loosely-coupled sequencing system arranged to receive transaction initiation information from the said primary

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system and then receive log data during the transaction and update the relevant data, and to not transmit backup completion information to the said primary system after receiving transaction completion information from the primary system until
5 that backup update processing has completed.

15. A data backup and recovery system for computers characterized by blocks storing sequentially records containing a single unique key and zero or one or more non-unique keys and a primary
10 system that controls the location of these blocks by means of a location table pairing the blocks with physical addresses in random access memory and manages a database or databases stored in random access memory.

16. The said data backup and recovery system of Claim 15, characterized by the said primary system using the main memory of the primary processing device that performs application processing as the said random access memory and provided with a database control mechanism that modifies the content of a
20 database or databases in the said random access memory and a primary backup and recovery control mechanism that transmits data describing those modifications when the said database control mechanism has modified the said database or databases.

17. The said data backup and recovery system of Claim 15, characterized by the said primary system provided with a primary processing device that performs application processing and a primary storage device separate from the main memory of this primary processing device and made up of random access memory
25 that stores the said database or databases.

18. The said data backup and recovery system of Claim 15, characterized by the said primary system provided with the said synchronous tightly-coupled sequencing system or the said
35 asynchronous loosely-coupled sequencing system.

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19. The said data backup and recovery system of Claim 16, characterized by the said primary system provided with the said synchronous tightly-coupled sequencing system or the said asynchronous loosely-coupled sequencing system.

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20. The said data backup and recovery system of Claim 17, characterized by the said primary system provided with a communicating means that performs communication of backup data, a database control mechanism that modifies the content of the
10 said database or databases, and a primary backup and recovery control mechanism that transmits via the said communicating means data describing modifications when the said database control mechanism has modified the content of the said database or databases.

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21. The said data backup and recovery system of Claim 17, characterized by:

the said primary provided with only a communicating means that
20 performs communication of backup data; and

the said primary storage device provided with a database control mechanism that modifies the content of the said database or databases, and a primary backup and recovery control mechanism
25 that transmits via the said communicating means data describing modifications when the said database control mechanism has modified the content of the said database or databases.

22. The said data backup and recovery system of Claim 17,
30 characterized by the said primary storage device provided with a communicating means that performs communication of backup data, a database control mechanism that modifies the content of the said database or databases, and a primary backup and recovery control mechanism that transmits via the said communicating
35 means data describing modifications when the said database

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control mechanism has modified the content of the said database or databases.

23. The said data backup and recovery system of Claim 17,
5 characterized by the said primary system provided with the said synchronous tightly-coupled sequencing system or the said asynchronous loosely-coupled sequencing system.

24. A data backup and recovery system for computers characterized
10 by provision of:

a secondary system or systems provided with backup blocks
corresponding to blocks storing source data on a primary system
that the secondary system or systems backs up, that uses a
15 location table pairing those blocks with physical addresses in random access memory to control the locations of those blocks, and that manages a backup database or databases stored in random access memory; and

20 the said synchronous tightly-coupled sequencing system or the said asynchronous loosely-coupled sequencing system.

25. The said data backup and recovery system of Claim 24,
characterized by:

25 the said secondary system using the main memory of the secondary processing device that performs application processing as its random access memory and provided with a secondary backup and recovery control mechanism that modifies a backup database or
30 databases in the said random access memory with data transmitted from the primary system that the secondary system or systems backs up; and

the said synchronous tightly-coupled sequencing system or the
35 said asynchronous loosely-coupled sequencing system.

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26. The said data backup and recovery system of Claim 24, characterized by:

the said secondary system equipped with a secondary processing
5 device that performs application processing and a secondary storage device made up of random access memory that stores a database or databases apart from the main memory of the secondary processing device; and

10 the said synchronous tightly-coupled sequencing system or the said asynchronous loosely-coupled sequencing system.

27. The said data backup and recovery system of Claim 24, characterized by:

15 the said secondary system equipped with a secondary storage device made up of random access memory that stores a database or databases;

20 the said secondary storage device provided with a means of communication of backup data and a secondary backup and recovery control mechanism that modifies the said backup database or databases with data transmitted via the said means of communication from the primary system that the secondary system
25 backs up; and

the said synchronous tightly-coupled sequencing system or the said asynchronous loosely-coupled sequencing system.

30 28. The said data backup and recovery system of Claim 24, characterized by the said secondary system or systems provided with the said synchronous tightly-coupled sequencing system or the said asynchronous loosely-coupled sequencing system.

35 29. The said data backup and recovery system of Claim 25, characterized by the said secondary system or systems provided

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with the said synchronous tightly-coupled sequencing system or the said asynchronous loosely-coupled sequencing system.

30. The said data backup and recovery system of Claim 24,
5 characterized by:

the said secondary processing device provided with a communicating means that performs communication of backup data and a secondary backup and recovery control mechanism that
10 modifies the said backup database or databases with data transmitted via said communicating means from the primary system that the secondary system backs up; and

the said synchronous tightly-coupled sequencing system or the
15 said asynchronous loosely-coupled sequencing system.

31. The said data backup and recovery system of Claim 24, characterized by:

20 the said secondary processing device provided solely with a communicating means that performs communication of backup data;

the said secondary storage device provided with a secondary backup and recovery control mechanism that modifies the said
25 backup database or databases with data transmitted via said communicating means from the primary system that the secondary system backs up; and

the said synchronous tightly-coupled sequencing system or the
30 said asynchronous loosely-coupled sequencing system.

32. The said data backup and recovery system of Claim 26, characterized by the said secondary system or systems provided with the said synchronous tightly-coupled sequencing system or
35 the said asynchronous loosely-coupled sequencing system.

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33. The said data backup and recovery system of Claim 27, characterized by the said secondary system or systems provided with the said synchronous tightly-coupled sequencing system or the said asynchronous loosely-coupled sequencing system.

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